NEWSLINE

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Special day to showcase science

FROM THE DIRECTOR'S OFFICE

Jeff Wadsworth

I invite all of you to join me on March 21, a special day we have set aside to celebrate our science and technology accomplishments.

Extraordinary science and engineering make the Laboratory what it is, and the program for Science Day 2001 will highlight some of our recent achievements.

We are in the science business because the nation continues to need what E.O. Lawrence envisioned our Laboratory to be — an institution of size and scale, with scientific and technical diversity, and an ability to apply these resources to tackle major research and development challenges to solve important national problems. Our team science and technical excellence helped to win the Cold War and continue to sustain our leadership in research areas that support our national security mission for the National Nuclear Security Administration and other Department of Energy programs, as well as our other sponsors.

See **DIRECTOR'S OFFICE,** *page 8*

Supercomputing's best, brightest on display

The Lab will hold its first ever Science Day, a daylong program of show and tell that highlights the Lab's myriad scientific and technological accomplishments, on Wednesday, March 21.

All employees are invited to the event, which kicks off at 8 a.m. in the Bldg. 123 auditorium. National Nuclear Security Administration and Department of Energy dignitaries, community leaders and other invited guests will also attend.

SCIENCE DAY

"Extraordinary science and engineering make the Laboratory what it is, and the program for Science Day 2001 will highlight some of our recent achievements," said Deputy Director Jeff Wadsworth in his invitation to employees (sees Director's Office column).

The day will feature discussions by NNSA Administrator John Gordon; Director

See **SUPERCOMPUTING,** *page 7*

Employee mortality rates lower than national norm, ongoing study reveals

Mortality rates for current and former Laboratory employees continue to decrease and are dramatically lower than death rates for the U.S. population in general, an ongoing study shows.

In a talk to the Valley Study Group this week, Mort Mendelsohn of the Biology and Biotechnology Research Program revealed results of a study conducted with BBRP's Dan Moore, which showed that for all causes of death during the period 1984 through 1996, Lab employees died at less than half the rate of the U.S. population.

See **MORTALITY,** *page 8*

Stockpile stewardship needs infrastructure budget boost

The demands of stockpile stewardship require major investments in new facilities and capabilities in order for scientists and engineers to more thoroughly understand the performance of nuclear weapons, Director Bruce Tarter said in written testimony submitted to Congress Tuesday.

The testimony was part of a hearing on the needs of aging National Nuclear Security Administration facilities by the Senate Appropriations Subcommittee on Energy and Water Development. In addition to Tarter's written testimony, the subcommittee heard comments from NNSA Administrator Gen. John Gordon as well as Los Alamos Director John Browne.

Gordon explained that the NNSA complex has shrunk to the appropriate post-Cold War size to maintain the planned stockpile of nuclear weapons. The complex cannot be reduced any further and has already eliminated duplication to achieve efficiencies.

Gordon further explained that in recent years

See **INFRASTRUCTURE,** *page 8*

Gordon unveils a new plan, attitude for NNSA organization

Gen. John Gordon, administrator for the National Nuclear Security Administration, called Wednesday for a "new attitude of cooperation and teamwork" in announcing his plan to get national security missions moving forward strongly.

Gordon unveiled a team "corporate" structure designed to balance and integrate NNSA priorities and focus more clearly on missions and products. The transition into a new organizational structure will not be easy, he acknowledged. "Change is never easy. It's going to be hard. Organizational change is always difficult."

But change is necessary to fulfill the congressional mandate that created the NNSA last year, Gordon said, noting that the administration was "born out of controversy" and "born out of frustration with our past effectiveness and efficiency.

"Congress asked that we act and look differently," he said. "We have been given a great opportunity to form a new agency."

In the eight months since he became administrator, Gordon said NNSA has "had some successes.

"We've gotten a budget increase and some indication from the Hill that we're getting some support," he said. "Morale is better.

"We're off the front page, which is a non-trivial achievement," Gordon added. "It's time to take control of our own destiny."

Ticking off other accomplishments, Gordon said he has submitted a five-year plan to the Office of Management and Budget and NNSA has "made great strides" in nonpro-

See **GORDON,** *page 7*

Gen. John Gordon

Science on Saturday 2001

Weathering our changing climate

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NATIONAL IGNITION FACILITY

Positive progress reports for NIF

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Forging frontiers in supercomputing

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LAB COMMUNITY NEWS

Weekly Calendar

Technical Meeting Calendar, page 4

Today **16**

To learn more about the **LDRD process** and what makes a successful proposal, employees are invited to attend a discussion beginning at 1:30 p.m. today, in the Bldg. 123 auditorium. Doug Wright, chariman of the LDRD Research Committee, and Lou Terminello, deputy director for the Laboratory Science and Technology Office, will lead the discussion.

Tuesday **20**

Six sessions of a two-hour workshop — covering the latest information on **suspect and counterfeit parts, equipment, components and material** found at LLNL and other DOE sites — are scheduled for today and Wednesday, at 7:30 a.m., 10 a.m. and 1 p.m. in Trailer 2627, room 1020 (Hazards Control Training Center). The workshops are intended for procurement personnel, vendors, Technical Release Representatives, designers, engineers, construction and receiving inspectors, crafts, and managers of these individuals. There is no cost to attend. Reservations are needed. Contact: Sharon Hoard, 2-1903.

Wednesday **21**

A **panel of seniors** will share their wisdom and lessons learned through experiences in life at noon in Trailer 6575 (Press Room between Uncle Credit Union and Visitors Center auditorium). The panel, sponsored by the Health Services' Elder Care Support Group, will include seniors ages 81 to 92. No reservations are required. Employee/SLO family members are welcome and do not need badges. Contact: Marnette Yeager, 2-1217.

Thursday **22**

LLLWA is hosting a panel discussion, **"Six LLNL Women of Courage and Vision,"** from 11:30 a.m. to 1:30 p.m. in the Bldg. 543 auditorium. Lorie Valle of the Affirmative Action and Diversity Program will moderate the discussion with six past and present women employees. Topics include their work at the Lab and their ideas for encouraging young women to choose scientific and technical careers. Contact: Punita Sinha, 2-0354.

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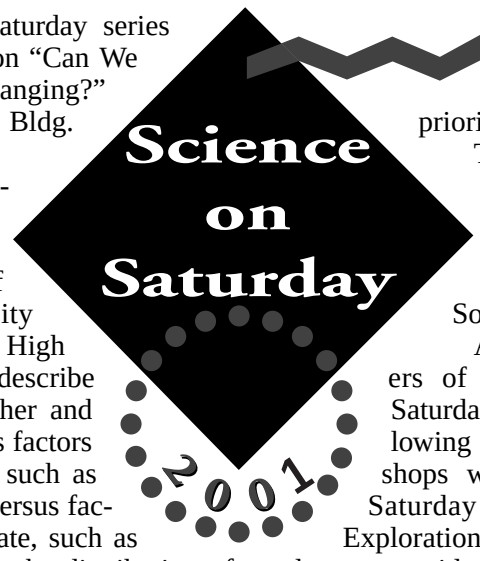
There will be an open house at the new **Visualization Work Center**, located in Bldg. 111, room 183. L-cleared employees are invited from 11:30 a.m. to 12:30 p.m. Q-cleared employees are invited to visit between 12:30 and 2 p.m. During the later period, the Power Wall will be used to show scientific visualizations at resolutions up to 5120x2048 pixels.

UP & COMING

The LLNL **Retirees Travel Slide Group** will meet March 27 at 2 p.m. in the Livermore Library meeting room. Arnie and Margo Kirkewoog will present "Bali Scenery and Hindu Temples."

Saturday talk examines climate change



The Lab's Science on Saturday series will feature a talk tomorrow on "Can We Predict If Our Climate Is Changing?" from 9:30 to 11:15 a.m. in the Bldg. 123 auditorium.

Jerry Potter of LLNL's program for Climate Model Diagnosis and Intercomparison, Ron Rusay of Diablo Valley Community College and Amador Valley High School teacher Eric Thiel will describe the differences between weather and climate. They will also discuss factors that can change the weather, such as the sun and the earth's orbit, versus factors that can change the climate, such as volcanic eruptions, changes in the distribution of sea-ice and snow and the effect of increasing carbon dioxide from such things as car exhaust, factories and power plants.

The speakers will also describe how scientists use a mathematical model of the earth's atmosphere to predict climate change.

Science on Saturday is a six-week series of free 90-minute talks geared toward middle and senior high school students.

This is the second to last lecture in the series. The final lecture will be offered on March 24, also from 9:30 to 11:15 a.m. The talks are open to students, their parents or guardians and teachers. Registration is at the door and seating is available on a first-come, first-served basis, with priority given to students and teachers.

The series is co-sponsored by the Laboratory's Science & Technology Education Program and the Livermore chapter of Sigma Xi, the Scientific Research Society.

An additional workshop for teachers of grades 6-8 will continue this Saturday and next week immediately following the lecture. The teacher workshops will expand on the Science on Saturday talk with the aid of Great Explorations in Math and Science (GEMS) classroom guides and materials.

The workshops will be held at the Lab Visitors Center from 8 a.m. to 3:30 p.m. on March 17 and 24. Teachers should register with Liselle Clark (clark87@llnl.gov, 2-5468) or Paula Thomson (209-468-9096).

Next week's talk will be on "How Light Is Changing Your Future" by Chris Ebbers and Joel Speth of LLNL's Laser Science and Technology Program and West High School teacher Randy Mohenke.

For more information on Science on Saturday, check the Web at http://education.llnl.gov/sos or call the STEP information line at 2-6818

Retirees sail the seas to grab a glimpse of marine life

By Bob Becker
LLNL RETIREE

RETIREES' CORNER

The communication from retirees has been very sparse lately. Are there any retirees who read this who have some creative thoughts or suggestions about the column, what kinds of articles are of interest, and how we can increase input? I would really appreciate your ideas. Write to me, Bob Becker, 1690 Frederick Michael Way, Livermore, CA 94550, or call me at 925-447-3867, or e-mail rebecker@aol.com

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It is always nice to hear from **Alice Schwarber** (Travel) who, with her husband Tony, continue to take interesting trips. They recently returned from a trip to the Sea of Cortez on a 98-passenger ship. They did not see any whales in the gulf, but on a trip to the Pacific, there they were. The January weather was clear and cool, and the water was too cold for swimming.

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Arlene and **Steve Chinn** (Health Chemistry, Hazards Control and Materials Management) just returned from a fascinating trip to the Antarctic aboard a Russian icebreaker. Steve wants to see all the species of penguins and this trip put him well on the way to reaching that goal.

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Edgar Peck (Chemistry, Test Program. Defense Systems) sent me a copy of his Christmas letter from Rocklin. Edgar and Janet took a trip to Europe last summer. The high point was attending an Oberammergau Passion Play, which Edgar described as a very moving experience. They are still very active in church-related functions, including a campaign to raise $450,000. Edgar has preached in a number of churches in the Sacramento area.

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The **retirees' luncheons** continue to be successful events. The speaker was the Livermore librarian and she brought us up to date on the plans for the new library. As I recall, it will have about 55,000 square feet and I am sure that it will be a facility that can meet the city's library needs.

Caltech scholarship fund set in Howard Powell's memory

A memorial/scholarship fund in the name of Howard T. Powell has been established at the California Institute of Technology.

Powell, a longtime leader and senior manager in the Laser and NIF directorates, died in November of a heart attack.

If you wish to contribute to this fund, please make your check payable to Caltech and mail it to: Caltech, MC 105-40, Pasadena, 91125. Caltech has requested the donor to identify the check (in the memo section) and the envelope as part of the Howard T. Powell Memorial Fund.

Please note that only the individual or business writing the check will receive a tax deduction form from Caltech. Caltech will notify Powell's family of all contributions in his memory.

Newsline

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AROUND THE LAB

Institute serves to forge new supercomputing frontiers

Editor's note: This is the last in a series of articles on the Lab's research institutes. Today's article looks at the Institute for Scientific Computing Research.

By Elizabeth Campos Rajs
NEWSLINE STAFF WRITER

The main offices for the Lab's Institute for Scientific Computing Research are located just down the hall from the world's most powerful supercomputer. That proximity is proving to be a powerful lure for computer scientists, professors and students from around the country, offering them unparalleled research opportunities.

"There is no other game in this country quite like this in terms of supercomputing," said David Keyes, acting director of the ISCR. "The ASCI computer represents a new class of hardware and software; that's the challenge to scientists. We have to study the machine and create the software to run it. It didn't come with shrink-wrapped scientific software.

"We're helping IBM to understand the implications of the architecture of their own machine. As a result, a lot of computer scientists are interested in working with us," he added.

Jointly operated by the University Relations Program and the Center for Applied Scientific Computing, the institute is the primary link between the Lab and university collaborators, students and postdocs.

"The ISCR serves a vital role in coupling university collaborators with a core part of the Laboratory," said Harry Radousky, acting director of the University Relations Program.

Founded in 1986, the ISCR is one of the University Relations Program's five institutes, which together form a centerpiece of the Lab's research collaborations with universities. The other institutes are the Center for Accelerator Mass Spectrometry, the Materials Research Institute, the Institute for Geophysics and Planetary Physics and the Institute for Laser Science and Applications.

About three years ago, the institute was joined with CASC, Radousky said. CASC serves the programmatic needs for high-end computing research and development, while the institute bridges the Laboratory with the academic community through collaborative research projects, visiting faculty, student internships, workshops and an active seminar series. ISCR's research participants work closely with the Lab's CASC scientists in addressing computational challenges at the Laboratory, Keyes said.

"It's remarkable over the past few years how the institute has blossomed from a small set of interactions to a wide ranging set of collaborations involving some of the best computational scientists from around the world," said Steve Ashby, director of CASC.

JOSEPH MARTINEZ/TID

David Keyes

Keyes had been an ISCR faculty participant since 1997 and came on board half time as the acting director in 1999. He divides his time between the Laboratory and Old Dominion University in Norfolk, Va., where he is chairman of the math and statistics department and an adjunct professor of computer science. In addition, he is also an associate research fellow at the NASA Langley Research Center.

"It's somewhat of an awkward lifestyle," he conceded, "but it's so exciting to be part of the institute and working with ASCI."

The institute aims to be the "eyes and ears" of the Lab in computational science by keeping aware of and connected to important external advances, he said. It also attempts to be the "feet and hands" in carrying those advances into the Lab and incorporating them into practice, Keyes said.

"It's a university chair's job to be aware of trends," he explained. "The Laboratory is subcontracting with me to be aware of what's out there, what's new and what should be tried here. It's a watchfulness function. 'Hands and feet' refers to bringing in faculty and their students."

Last summer, the institute sponsored 55 students in residence working with CASC scientists and expects to host about the same number this summer.

"The main thrust of the student program is recruitment. We want to make sure they have a positive experience at a national laboratory," Keyes said. "Here they can meet computing science experts that they might not meet at conferences."

As part of last year's summer program, the institute launched its Internships in Terascale Simulation Technology tutorial series, which featured two lectures per week for 10 weeks. Most of the speakers were Lab scientists, he added.

"We wanted to expose talented students to the Lab way of life," said Keyes, who was also one of the lecturers.

Three of the Lab lecturers, Alice Koniges, John May and Van Henson, had recently co-authored computational science books, he noted.

"The ISCR is the university outreach part of computing science," he added. "Until a few years ago, the institute sponsored a handful of postdocs and UCRD grants. Since ASCI took off, the program is now dominated by summer program visitors."

In the last fiscal year, the ISCR hosted 158 visitors to the Lab, who were primarily from academia, Keyes noted.

The institute also sponsored six workshops, including a "power programming" workshop last May that featured speakers from IBM, UC San Diego and Argonne National Laboratory.

"We do many of the projects here with Argonne. The two biggest and best computational science groups in the country are CASC and the math and computer science group at Argonne," he noted. In fact, Keyes collaborated with scientists from Argonne, NASA and Old Dominion on a simulation project that garnered a Gordon Bell Special Award in 1999.

The ISCR also inaugurated a distinguished lecture series last year, the ASCI Institute for Terascale Simulation Lecture Series, which featured the "deans of American computing science," Keyes said, including Peter Lax of the Courant Institute, Gilbert Strang of MIT, Frederick Brooks of the University of North Carolina, Burton Smith of the Tera Computer Co., and David Johnson of AT&T.

"It was a specialized version of the Director's Distinguished Lecturer Series, dedicated to computational science," he said.

This year's series began in January with a talk by Ingrid Daubechies of Princeton, who popularized wavelets, and will include talks in March by decorated computational astrophysicist Michael Norman (formerly an LLNL scientist) and in May by Gene Brooks, a computer security expert.

"We're talking to the 'who's who' of computational science and inviting them to come to the Lab for a day. I see them as future members of high-level advisory committees," Keyes said. "We invite them to speak at the Lab, offer them an immersive day here, and they come away with a good picture of the Lab behind the gates."

For more information about the institute, see the Web at http://www.llnl.gov/casc/iscr/

Status review confirms progress on the National Ignition Facility

Two positive steps have occurred over the last several months that highlight NIF progress

Late last week, Gen. Tom Giaconda, acting NNSA deputy administrator for Defense Programs (DP), signed the NIF Baseline Change Proposal for fiscal year 2001 for the National Ignition Facility (NIF).

The baseline change makes the NIF Project plan consistent with FY01 funding and moves some funds from fiscal years 2007 and 2008 forward into fiscal year 2003, but it does not change the total estimated cost of the project.

DP Status Review

Earlier this month, the Defense Programs (DP) Status Review of NIF found that NIF has made significant progress in all areas reviewed and is meeting its planned milestones within budget. These observations were underscored during a tour that highlighted the 1,000 tons of equipment that has been installed in NIF since the middle of last summer.

The review also found that an earned value system is in place and maturing. Earned value is a well-recognized process of tracking dollars planned and costed for work planned and performed. Requested in this year's congressional appropriations language, this new tool will assist the NIF project in tracking progress toward completion of the facility.

NIF personnel also presented a cost model for NIF operations after the facility is complete. The DP reviewers agreed that the operations cost model was reasonable and recommended continued updating as cost estimates mature.

More information and recent photos of NIF can be found on the NIF Website at www.llnl.gov/nif.

Scientific solutions through supercomputing, simulation

"Simulation plays a central role in virtually every LLNL program," stated Associate Director for Computation and Lab Chief Information Officer Dave Cooper. "From materials modeling in physics and biology to global climate simulations to engineering structural dynamics and combustion reactions in lasers and energy, simulation is emerging as a peer to theory and experiment in scientific discovery."

Cooper will elaborate this theme in his Science Day talk, "Simulation: Changing the Nature of Scientific Discovery," Wednesday, March 21 at 2:30 p.m. in the Bldg. 123 auditorium.

Cooper's Science Day presentation describes the current terascale-computing environment, including unprecedented levels of both classified and unclassified computing capability at LLNL. He will discuss the strategy to acquire, develop and use this unique simulation capability, along with future plans and the Lab's strategic partnerships with the computing industry.

The Science Day celebration will highlight the many uses of LLNL's unique supercomputing abilities in the fields of simulations and computations in a poster session and series of talks throughout the day. (For more information, see the Website at http://stars.llnl.gov/ScienceDay/.)

"Modeling and simulation are increasingly important in many of DOE's programs," said Cooper. "For example, large-scale simulation is now playing an enabling role in the DOE/National Nuclear Security Agency's (NNSA) Stockpile Stewardship Program (SSP)."

> "... simulation is emerging as a peer to theory and experiment in scientific discovery."
>
> –Dave Cooper

The challenge facing the SSP is to maintain confidence in a smaller nuclear stockpile in the absence of underground nuclear testing; large-scale simulation provides the key to meeting this challenge. Similar challenges face the DOE Office of Science's new Scientific Discovery through Advanced Computing (SciDAC) initiative, which seeks to advance scientific discovery through the use of terascale simulation.

Cooper explained that high-performance computers — supercomputers — will provide this new capability and serve as the platforms for the integration of experimental data.

"In support of NNSA mission needs, the Accelerated Strategic Computing Initiative (ASCI) was created to accelerate the development and deployment of supercomputers far beyond what might have been achieved by simply accepting the status quo or tracking market availability," Cooper said.

The recent successes in simulating, for the first time in three dimensions, the primary and secondary components of an ignited nuclear weapon attest to the unprecedented progress of the ASCI program.

"But these accomplishments were made possible by the successes of other elements of the ASCI program, because high-performance simulation requires more than just a very large and fast supercomputer," Cooper explained.

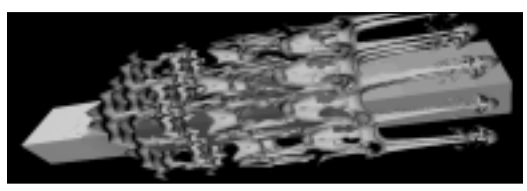
It requires a balanced computing environment consisting of high-speed networks, storage and data analysis — including scientific visualization.

"It also requires algorithm research focused on developing algorithms that are scaleable and efficient. Programming techniques capable of providing simultaneous and efficient use of thousands of processors are essential. Finally, high performance simulation requires a state-of-the-art facility capable of providing the floor space and power to house and operate massive terascale computers," Cooper concluded.

For more information about LLNL's ASCI and Computations directorate, see http://www.llnl.gov/asci/ and http://www.llnl.gov/comp/about.html.

Agenda

Scientific SuperComputing



"Meeting the Next-Decade National Challenges via Integration of Theory, Experiments,Technology, and Large-Scale Simulation"

Bldg. 123 Auditorium

8 a.m. Welcome and overview of Laboratory, C. Bruce Tarter, director, LLNL.

8:15 a.m. "Role of Science in the NNSA," Gen. John Gordon, under secretary for Nuclear Security & administrator of the National Nuclear Security Administration, DOE.

8:30 a.m. "University of California Perspectives," C. Judson King, provost and senior vice president, University of California Office of the President.

8:45 a.m. "DOE Office of Science Perspectives," James Decker, acting director of the DOE Office of Science.

9 a.m. "LLNL Science & Technology," Jeffrey Wadsworth, deputy director for Science & Technology, LLNL.

9:15 a.m. "Terascale Turbulence: Simulation of Scale Interactions in Richtmyer-Meshkov Mixing," William P. Dannevik, deputy associate director for Science and Technology and Atmospheric Sciences division leader, Energy and Environment, LLNL.

9:45 a.m. Break

10:15 a.m. "From the Supercomputer to the Grid," Larry Smarr, director, California Institute for Telecommunications and Information Technology; professor of Computer Science and Engineering, University of California, San Diego; former director of the National Computational Science Alliance.

11 a.m. "Computational Materials Science at the Terascale: Toward Predicting Materials Performance and Aging," Tomas Diaz De La Rubia, Chemistry and Materials Science Directorate, LLNL.

11:30 a.m. "Scaling Astrophysics into the Laboratory Postdoctoral Research Associate," Jave O. Kane, Institute for Laser Science and Applications, University Relations Program, LLNL.

Noon Lunch (by invitation)

2 p.m. "Simulation: Changing the Nature of Scientific Discovery," David M. Cooper, associate director for Computation and chief information officer, LLNL.

2:30 p.m. "Quantum Simulations of Condensed Matter Systems," Giulia A. Galli, Quantum Simulaton group leader, Physics and Advanced Technologies Directorate, LLNL.

3 p.m. "Computational Biology," Michael E. Colvin, Computational Biology group leader, Biology and Biotechnology Research Program, LLNL.

3:30 p.m. Break

3:45 p.m. "Pushing the Envelope of Global Climate Simulation," Starley L. Thompson, Atmospheric Science Division, Energy and Environment Directorate, LLNL.

4:15 p.m. "Application of Large-Scale Computer Simulations for Understanding Earthquake Phenomena," David B. McCallen, director of the Center for Complex Distributed Systems, Engineering Directorate, LLNL.

4:45 p.m. Closing remarks, C. Bruce Tarter, LLNL.

5:30 p.m. Reception

Please note the agenda is subject to change. For more information, see the Website at http://stars.llnl.gov/ScienceDay/

Poster session presents Lab's wide spectrum of science

The Science Day poster session, in a tent that will be set up across from Bldg. 123 throughout the March 21 celebration, presents an opportunity for one-on-one interaction with presenters. The session includes a spectrum of posters, video displays and demonstrations of hardware and instrumentation, representing all Laboratory programs and directorates. Here are the presentations scheduled:

• **Activation of the Mercury Laser:** A diode-pumped solid-state laser driver for inertial fusion, Andy J. Bayramian. Initial measurements are reported for the Mercury laser system, a scalable driver for rep-rated high-energy-density physics research.

• **Adaptive Optics,** James Brase. Advances in microelectromechanical systems, coupled with new image sensors and quickly advancing computer capabilities, will provide small, inexpensive optical systems that can break through the performance limitations in current systems.

• **Advanced Technology Kill Vehicle,** Arno Ledebuhr, Edward English, Larry Ng. Pushing the technology envelope to develop an agile, lightweight, high-performance, advanced-technology kill vehicle to support the current and future national missions in ballistic missile defense and space security.

• **Application of Carbon Nanotube-Based Atomic Force Microscopy to Proteomics and Biological Forensics,** Aleksandr Noy. A new generation of probes based on carbon nanotubes has promised a significant increase in the atomic force microscopy resolution.

• **Atmospheric Dispersion Science for Emergency Response,** Donald Ermak. Recent research from the National Atmospheric Release Assessment Center, supported by DOE, responding to worldwide emergencies associated with the release of hazardous material into the atmosphere.

• **Bi-directional Scatter Diagnostics Quantifies Scatter Loss of NIF Optics/ Fluorescence Imaging as a Nondestructive Technique to Identify 3-w Damage Precursors on NIF Final Optics,** Regula Fluck ,Michael Nostrand. A bidirectional scatter diagnostic was developed to characterize the transmission and scatter of NIF final optics.

• **Chemical Agent Negation for Theater Missile Defense,** Glen Nakafuji, Roxana Greenman, Theo Theofanous. A multidirectorate Laboratory team, in collaboration with the University of California at Santa Barbara (UCSB), is pursuing experimental, theoretical, and computational tasks relating to the hydrodynamic breakup of chemical agents during fallout.

• **Computational Modeling in Laser Medicine,** Richard A. London. The LATIS computer program simulates the time- and space-dependent processes of laser propagation and the resulting thermal, material and mechanical response of the tissue.

• **Computer Modeling of a Fusion Plasma,** Bruce I. Cohen. This presentation illustrates some of the progress in computer modeling of plasma physics and controlled fusion.

• **A Cytogenic Signature of PhIP-Induced Mammary Carcinomas in Rats,** Allen T. Christian, James D. Tucker. A way to link cytogenetic and genomic data using a rat mammary carcinogenesis model and a new microdissection technique.

• **Deep Subsurface Imaging in Tissues Using the Spectral – and Polarization – Difference Imaging Technique,** Stavros G. Demos, Michael Staggs, Harry B. Radousky. The spectral polarization difference imaging technique utilizes the wavelength dependence of the mean visit depth of photons inside a tissue sample before they emerge in the backscattered direction.

• **Designer Diamond Anvil for Advanced High-Pressure Experiments,** Samuel T. Weir, Jagan Akella, Chantel Ruddle, Yoghesh K. Vohra, Aaron Catledge. To address the need for better experimental diagnostics at ultra-high pressures, an entire suite of new ultra-high-pressure diagnostic probes that feature diamond-encapsulated microcircuits capable of functioning at multi-Mbar pressures has been developed.

• **Developing DNA Signatures for Pathogen Detection,** Gary Andersen, Lyndsay Radnedge, Tom Slezak. Both computation- and laboratory-based methods for identifying the specific regions in the DNA that differentiate two bacterial species: Yersinia pestis, the causative agent of bubonic plague, and Yersinia pseudotuberculosis, which causes relatively mild gastrointestinal disease.

• **Development and Applications of a Saturated Table-Top X-Ray Laser,** Joseph Nilsen, James Dunn. The high-repetition rate, table-top Comet laser can drive saturated nickel-like X-ray lasers with wavelengths from 20.3 to 13.9 nm using less than 10J of energy.

• **Direct Carbon Conversion: Efficient systems for Conversion of Fossil Fuels in a Carbon-Managed Economy,** Nerine Cherepy, John F. Cooper, Roger Krueger. Direct carbon conversion employs a new class of fuel cell that generates electricity from the electrochemical reaction of carbon and atmospheric oxygen.

• **EIGER,** Kim Mish, Rob Sharpe. A scalable electromagnetics framework models frequency-domain electromagnetics for antennas and other communications equipment used in DOE and DoD programs and in industry.

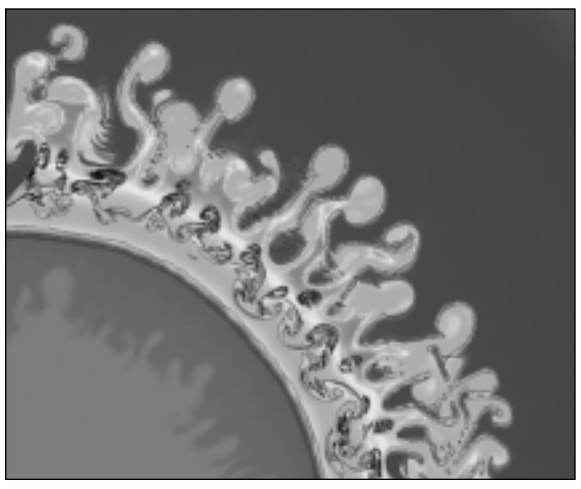
• **Environmental and Biomedical Research in the Center for Accelerator Mass Spectrometry,** Graham Bench, Tom Brown, Bruce Buchholz, Marc Caffee, Karen Dingley, Brian Frantz, Patrick Grant, Tom Guilderson, Michaele Kashgarian, John Knezovich, Carrie Masiello, Ted Ognibene, Gordon Seitz, John Southon, Ken Turteltaub, John Vogel. The center houses AMS systems that provide exceptionally sensitive approaches for measuring concentrations of specific isotopes (e.g., 14C) in relatively small (<1 mg) samples and a nuclear microprobe that provides micron-scale resolution of elements in biological materials.

• **Experimental Geophysics Applied to National Needs,** Brian P. Bonner. For national security, the physical properties of metals and special nuclear materials, and phase transitions in high explosives at high pressure are being studied using diamond anvil cells and other high-pressure apparatus.

• **Extreme Ultraviolet Lithography,** Donald Sweeney. Extreme ultraviolet lithography (EUVL) is a lithography method that uses very short wavelength light — about 10 nm — to create very-high-resolution lithographic images for use in the semiconductor industry making circuit features smaller.

• **Glucose Sensor,** Steven Lane. A team of scientists at LLNL and MiniMed, Inc. are developing a minimally invasive device to monitor glucose levels; it will be fully implantable in the body and be able to measure glucose levels continuously.

• **Handheld Advanced Nucleic Acid Analyzer,** Ronald P. Koopman, Shavnavaz Nasarabadi. The first truly portable DNA analysis instrument suitable for real-time identification of bioagents in the field, originally developed for the defense and intelligence communities to detect biological agents that might be used on the battlefield or in a terrorist attack; also broad civilian health applications.



Turbulent mixing in supernovas.

• **Hydrogen at Extreme Conditions: Building Jupiter in the Laboratory,** Neil Holmes, Gilbert Collins. The performance of inertial confinement fusion targets and the interior models of the giant planets like Jupiter depend strongly on models of the properties of dense hydrogen in the high-pressure, high-temperature fluid phase.

• **Isotope Hydrology for Water Resources Management,** G. Bryant Hudson, Jean E. Moran. Applying isotope hydrology to evaluation of California groundwater vulnerability, noble-gas artificial groundwater tracers, and tracking sources of uranium using isotope ratios.

• **LLNL — Home to the World's Fastest Supercomputer,** Mark Seager. In June 2000, ASCI White demonstrated a world-record 3.9 teraops delivered on a hydrodynamics benchmark, an achievement that eclipses the previous world record, set by ASCI Blue-Pacific in 1997, by over 325 percent.

• **Matrix-Free Identification of Bacillus Spore Species Using Infrared Laser Desorption and Time-of-Flight Mass Spectrometry,** Joel Ullom, Simon Labov, Kevin C. Langry. As a step toward real-time identification of microorganisms, this team has performed mass spectrometry on intact bacterial spores with no matrix; using infrared laser desorption and TOF-MS with no matrix, we have successfully differentiated between intact spores of several bacillus species.

• **Microfabricated, Multifrequency, Particle-Impedance Characterization System,** Peter Krulevitch, Chris Fuller, Julie Hamilton, Harold Ackler, Adam Eldredge, Frederick Becker, Jun Yang, Peter Gascoyne. The microfabricated flow-through impedance characterization system is capable of performing AC broadband, multifrequency measurements on cells and other particles for use in hematology, pharmacology, forensics and counterbiological warfare.

• **Modeling Complex Protein Structures,** Michael Thelen, Ceslovas Venclovas. The use of comparative genomics coupled with computational protein structure prediction methods has enabled us to describe several new DNA repair proteins related to protection from genetic instability and human disease.

• **New Novel Materials at High Pressures and Temperatures,** Choong-Shik Yoo. With a third-generation synchrotron, microprobing laser spectroscopy, and diamond-anvil cell technology, high-pressure research is experiencing an unprecedented surge of breakthroughs, including polymeric carbon dioxide and new phases of 3-D magnetic elements.

• **NUFT Simulations of Subsurface Reactive Flow and Transport,** John J. Nitao. Accurate and dependable simulations of a wide variety of reactive flow and transport processes, allowing a better understanding of many of the major issues in the geological sciences.

• **PEREGRINE: A New Technology for Radiation Treatment of Cancer,** Christine Hartmann-Siantar. PEREGRINE is a highly accurate computer system for calculating where and how much radiation is absorbed in the body during radiation treatment for cancer and other diseases.

• **Post-Doctoral Research in NIF Programs,** A. Bullock, D. Hicks, N. Izumi, M. Shirk,and, K. Wharton. A wide range of research ranging from short-pulse laser-target interactions to X-ray and neutron diagnostic technique development and equation-of-state measurements relevant to planetary astrophysics.

• **Progress in Indirect-Drive Inertial Confinement Fusion Experiments,** O.L. Landen. In the area of laser light conversion to X-rays, we now have a fuller characterization, by Thomson scattering and three-wave mixing, of the laser-plasma instability mechanisms in plasmas emulating those of gas-filled NIF-scale hohlraums.

• **Protecting Information Networks,** Robert R. Burleson. We have developed a world-class competency in information operations and technology that is enabling researchers, policy-makers and implementers to understand the national security implications of global interconnectivity and to begin to address the problems posed by the nation's (and the world's) growing reliance on massive information networks.

• **Research and Advanced Tools for Evaluation of Global Climate Models,** Karl E. Taylor, Jerry Potter. These models are being used to predict future changes in global climate, with increasingly unavoidable implications for energy and economic policy.

• **Scalable Algorithms and Software Framework Enable Large-Scale Scientific Simulations,** Robert Falgout, François Gygi, William Henshaw, Peter Brown. Highlights of four areas of world-class research in support of scientific computational simulations.

• **The Search for Dark-Matter Axions,** Karl van Bibber, Darin Kinion. Featuring the world's quietest radio receiver to search for the elusive axion, a hypothetical ultra-light elementary particle that may constitute the dark matter of the universe.

• **A Single Molecule Study of DNA-Protein Interactions,** Laurence Brewer, Shelley Corzett, Ron Balhorn. An optical trap is used to manipulate individual DNA molecules in a novel microfluidic flow cell to study important biological processes that take place in cells.

• **The Spheromak Path to Fusion,** David N. Hill, the SSPX Team. In the spheromak, the fusion fuel is insulated from material surfaces using magnetic fields generated by currents within the plasma itself, possibly leading to cheaper, simpler fusion reactors than present designs.

• **STARS: Science and Technology Awards and Recognition System,** Pamela Harris. STARS is LLNL's dynamic browser-based database system for tracking the honors and awards received by the LLNL scientific and technical community.

• **Surface-Attached Interlocking Molecules,** Glen Fox, Andrew Vance. Developing new mechanically interlocking molecules for the formation of multifunctional and tunable self-assembled monolayers to create sensors with properties that can be controlled at the molecular level.

• **Surveying the Outer Solar System with Robotic Telescopes,** Stuart Marshall, Kem Cook, and Rodin Poratta. Novel surveys for both very large and very small objects in the Kuiper Belt using robotic telescopes.

• **Synthesis of Nanocrystals with Tunable Sizes and Properties Using Short-Pulse Lasers,** Long N. Dinh, Mehdi Balooch. A variety of nanocrystals with tunable sizes and properties.

• **Technology for Fissile Material Storage and Warhead Dismantlement Transparency,** James F. Morgan, John Luke. A set of hardware, software and procedures that allows measurements on classified objects without revealing classified information to the inspectors.

• **Terascale Browser: Interactive Exploration of Large Data,** Sam Uselton. The CASC visualization effort is exploring visualization strategies aimed at very-large-3-D and time-varying scientific simulation data sets.

• **The Virtual Valley: An Integrative Tool for Environmental Research, Education, Assessment and Planning,** William P. Dannevik, Douglas A. Rotman. Part of the new UC Merced start-up strategy is a vigorous institutional-level research partnership with LLNL, including elements in environmental science, information technology and engineering.

CLASSIFIED ADS

Check out the Employee Ads Web Services site at: https://www-ais.llnl.gov/llnl_only/apps/newsline/ads

AUTOMOBILES

1997 - Jeep Wrangler, 4X4, 4.0L 6 cylinder, 5 speed, AM/FM/Cass. 49,000 miles, $14,000 OBO. 925-443-6096

1969 - VW Bug. Runs--Good Project car. No smog. Extra body, VW engine stand, factory shop manual, and various repair books. $900.00. 925-443-1390

1998 - 1998 Ford Escort SE, 4dr. AC,AT,AM/FM cassette 76k miles, Emaculate condition $6000.00 OBO (Below blue book) 925-443-9651

1994 - Ford Tarus,clean, very low milage 31K mi., well maintained, new $300 sheepskins $7,000 obo 408-263-8822

1993 - Eagle Vision, 4dr, White, 96K miles, New wheels/tires, A/C and Pwr options, $4900/obo 925-837-6015

1999 - Acura CL 3.0 A/T, CD, Leather,1 Owner Excellent cond. To much to list. $21,500.00 209-549-9755 cell 209-604-4663. 209-549-9755

1982 - Toyota Tercell 5-speed hatchback SR-5. Good running condition. Needs some body work. Still has under 100K miles. $500 or BO. 925-443-7333

1991 - Honda Accord EX, Green, 2DR, Automatic, A/C, PWR windows, PWR locks, AM/FM/CD, Excellent condition, garaged, one owner.$6000 OBO. 925-454-1648

1995 - Mazda Mx-6 58,000 mi 5 speed (aprox. 35mpg) RUNS GREAT! all power, cc,am/fm cass. new front tires and brakes, clean, must sell $6,800 925-447-3133

1972 - Datsun 510 2-dr sedan, manual transmission, 1600cc engine, good condition 925-449-7908

1984 - Pontiac Sunbird 2000 A/C, 5 spd, $600.00 obo. 925-443-6908

1996 - Saturn SL2 4door, 2 airbags, air, power, moonroof, great condition, manual trans, 70K miles, $7000. 925-443-1113

1983 - BMW-533i, 183K miles, 5-spd, Recaro seat, sheeps, clean. Good condition and Very reliable; $5,000/obo. 925-484-0871

1997 - Honda Civic,4D EX: AT/tilt/CC,PW/PB/PS,AC,CD Moonroof, new tires. Excellent Condition. $13,500 OBO. 925-447-9344

1991 - Charcoal Honda Accord LX. Excellent condition. 76,000 miles. $6000 or B/O 925-447-8914

1995 - Eddie Bauer 4x4 fully loaded 110,000 highway miles clean car runs well phone and 6 disc cd player forest green and tan.$14,000 209-858-5876

1993 - Honda Civic CX, white, one owner, good condition, air, 5 spd. $4500 925-454-1526

1997 - Geo Metro LSI Coupe, AT, green, excellent cond., new tires, 64k, well maintained, very reliable, 35-40MPG! must sell, $3,900 OBO 510-486-1326

1996 - White Dodge Neon 2Dr Sport Coupe, 5 spd, CD/Radio, Great sound system, AC, Spoiler, Tinted windows, Great condition, less then 60K miles. $6,900 OBO 925-443-4610

1994 - Nissan Sentra, 5-speed, cruise control cassette player, AM-FM radio, 130,000 miles, new windshield. $4000 obo 209-824-1458

1972 - Chevrolet camper (van) 6k miles on rebuilt engine, new tires, lots of new parts, lots of extras, tow hitch. $2500 OBO 209-892-2610

1993 - Toyota Tercel, 4-door, A/T, tinted windows, car alarm, 123K miles, great condition, $3750 OBO, 925-449-7172

AUTOMOBILE ACCESSORIES

1970 VW 1600 Shortblock good condition $300 OBO 925-443-4350

Tires, Brand new off 2001 Chevrolet 4x4 H/D, LT245/75 16 inch 10 ply radial all terrain $350 925-447-4611

BICYCLES

Mens mountain bike, new tire,excellent condition $125 925-736-7799

BMX Mongoose trick bike, 20-inch, great condition, $75. OBO 209-823-0250

Boys 20 inch bicycle, Raptor Boom Tube, BMX. Excellent condition. $50.00 925-292-1714

Centurion 12 speed, Sport-DLX Model CR-MO, 31-32 inch and the color is white. Good Condition, $100 OBO. Call for details 925-634-8134

BOATS

1990 750 Yamaha Waverunner excelent condition low hours. $1700.00 obo 925-292-1581

96 Glastron GS185, 150 hours, V6, 190HP Excell. Cond. $10,500 Boat and Trailer. $12,000 Boat, Trailer and Hydro-Hoist. 209-835-4099

89 AL Bass boat, 16ft, 25 merc, runs great, $2000 209-786-2245

27.5 foot 1979 Bayliner Victoria cruiser. 2 cabins, head/shower. Renewed engine/outdrive/upholstery/canvas. Family fishing boat. Trailer. $12,500 209-478-7397

ELECTRONIC EQUIPMENT

HiEnd home theater system $400; N64 game system+games $250; Pair hifi speakers $50; Sony direct drive turntable $50 925-736-7799

Dream Cast - 2-controllers,1-game shark, 2-games (NFL 2K,Tony Hawk2), code books $175.00 209-823-5126

Stereo Speakers. 25 watts rms with 12 inch, 5 inch, and 3 inch drivers. Linear Phase Studio Monitor models. Excellent condition. $150 for the pair. 925-443-2245

Handspring Visor w/ 2 MB memory. Better than a Palm Pilot! Brand new in unopened box. Check them out at www.handspring.com. $135 ($180 retail + tax). 510-357-8642

Mac Performa 6100, greate for kids,all manuals&very clean,make me an offer! 925-371-5371

Macintosh G3/300mhz,128mb RAM, 24x CD,20gb HD plus 4gb 2nd HD, Zip drive, 56k external modem,Keyboard and Mouse. $600.00 209-874-1666

Brand new FireWire PCI card. $40. 925-455-4057

GIVEAWAY

Electric dryer works good but needs minor repair on door $25. Washing machine needs repair FREE U-haul. 209-462-8077

One large wood dog house. Two large dog crates. Call after March 18th. 925-443-4349

Hot tub, 175 gallons, working order 925-449-0718

HOUSEHOLD

Piano: 1906 Willard upright dark oak. $450/BO Desk: Roll-top style ~1905 painted redwood. $150/BO 925-449-1384

Modern solid walnut desk ($125), Sony 17in TV ($100), Room electrostatic airpurifier; $100; Electric dehydrator $25 925-736-7799

Oak bookshelves. 4ftx30inx12in and 3ftx4ftx12in; adjustable shelves. Sturdy, attractive, in excellent shape. $50 each. 925-606-9781

Computer desk, simulated oak/walnut, very solid, $75; upholstered swivel chair, rose fabric, like new, $75; cedar outdoor glider loveseat, $55. 925-454-9291

L-shaped sofa, 8 ft each side, off-white/light green pattern, great shape, $400 209-544-9337

Thomasville Cherrywood Dining table with pads to protect top, 6 matching high back chairs and buffet. asking $1375.oo OBO 925-426-7495

White Canopy bed with new mattress and boxspring $200.00 obo 925-292-1581

CA King Select Comfort air bed. $200 new, 1 yr old, asking $1,000 OBO. Call after March 18th. 925-443-4349

Dryer - Whirlpool gas, almond, $90 925-443-5565

Scroll-Saw, Dremel 16-inch, 2-speed. Pin-end, Plain-ends Blades. Quick change-blade adapter. Cast-iron base. owers-manual, Like-new $70.00. 925-447-6099

Century Bedside Bassinet, good condition, $35. Medela Pump-In-Style double breast pump, leather carrying case, $100. 209-473-7764

Ethan Allen furn: 2 lt blue stuffed chairs, $400. Matching ottoman, $150. Cherry end table,$200. LazyBoy love seat: Wheat, like new $450 209-239-3116

Dinnette set. Modern design. Smoked glass top with black metal frame. 4 black metal and vinyl chairs. 42x42 inches. Excellent condition. $199 obo. 925-292-9378

Side by Side Refrigerator, Hot Point, Harvest Gold, 19.6 cubic feet, excellent condition $125 OBO. 925-447-4345

Dining room set, Pecan, pedestal table/ 2 leaves, 8 chairs, buffet, china hutch, pads, $800.00 Desk, large oak office, oak chair. $275.00 925-828-2609

Five light ceiling fan country motif works great $30. Two sets of dark stained window sutters w/ hardware 24in X 24in $10 per pair. 925-245-9648

Emerson Color Stereo TV 20inches with remote control and stand excellent condition $100.00 209-239-5730

Brown sofa $40; 4-drawer dresser $30; white 2-drawer nightstand $15 510-792-1538

Wood Burning Stove: Free-standing German-made high-quality ceramic tile stove in excellent cond. $500 or bo. 925-606-6935

Dresser&Mirror w/9 drawers $40;Double bed & frame $100. Drafting Table $40.Eves 925-828-6568

LOST & FOUND

Found Bolle Prescription, bifocal sun glasses, in case. Near South Cafe. 925-443-1172

MISCELLANEOUS

Sears heavyduty sander ($70), scroll saw ($70), fish tank & accessories $30 925-736-7799

Sofas, one w/ queen-sleeper, coffee & end tables, $650. China cabinet, $600. Dining table w/ 6 chairs $500. Bedroom chest $35. Computer desk $30. 209-473-7764

Society Garlic and Agapanthus (Lily of the Nile) at $2.50 ea. 925-447-6192

Garage Sale, March 24, 8am to 2pm, Multi Family, 2694 Gelding Lane (Vasco north. Left on Dalton. Right on Gelding). Tons of great stuff! 925-443-1673

Mens black fleece robe from Lands End. Brand new still in packaging $35. Womens Bob Mackie artwork sweater wore once Black & Red with dragon $40. 209-462-8077

Bandsaw, 10-inch Rockwell, with-stand extra-blades and new sanding belts. $85.00. 925-447-1009

TELESCOPE: Celestron 80mm refractor with german equatorial mount. Perfect cond. $250. 925-455-4708

Drafting table, commercial unit made by Vemco. Nice condition. Will deliver in Pleasanton/ Livermore. $75 925-484-4099

Crib, mattress and changing table. Light colored wood, good condition. $50. 925-371-1607

Micrometer Set,Mitutoyo 6-12 inch, set includes 6 new micrometers in cases with standards, $500.00 925-462-2543

Shopsmith multi-purpose power tool. Combination wood lathe & drill press with accessories. $250/BO 925-454-1422

Oakdale Rodeo (4/14&15) tickets. Sponsor queen contestant and save!!-purchase by 3/31. $12 gen. adm., gate price $15. Lv msg; will call back! 209-835-4118

Exercise health rider - NEW $65 510-792-1538

Silk Screen material, hand & power tools, microscope, and more. 925-449-2008

Steven Kretchmer Men or womens Platinum Tension Set Ring. Size 7 Awesome ring! value is 5K, will sell for 1/2 $2500. 925-371-2958

Air compressor - Sears Craftsman 4.5 horsepower 20 gallon horizontal unit. New, bought last fall, used once. New $250, sell $150. 209-478-7397

Freud 3.25 HP Plunge Router, model FT2000E. Brand new in box, never used. Perfect for use in a router table. Excellent, $160.00. 925-606-6515

Garage Sale - Springtown March 17th. 1287 Heather Lane - Lots of Avon, new items, lots of misc. 9 - 3 Rain or Shine. 925-449-5957

MOTORCYCLES

1984 - KTM 500 and Yamaha Big Wheel 80 & all riding gear $1200.00 925-292-1581

1978 - Honda 400, street bike, clean, reliable, very low miles, electric start, all original except for new tires. $900 obo 408-263-8822

1995 - 1995 Harley 1200 Sportster 38K miles Forward Controls,Windshield,Saddle Bags & Tool Pouch,Luggage Rack & Extras 7000.00 OBO Dave 925-443-3651

1984 - Honda Magna 700cc 14k mi. Runs great! New rear tire, clean. $2300 OBO. 209-892-2610

1984 - Honda Goldwing Interstate, under 24k orig miles, metzlers, new stator (generator), super condition and ready to tour! $3700 obo. 510-538-1711

MUSIC INSTRUMENTS

GibsonES347,Rickenbacher350FG,1964FenderJaguar,GuildF45CE,PeaveyClassic30 w/matching bottom,CrateGX40dsp, PeaveyMark8 basshead.All excellent. 925-373-0483

PETS & SUPPLIES

Green Iguana - 3 1/2 years old (approx. 4ft long), with 6 ft X 4 ft X 1-1/2 ft display cage complete with lights, heater, and fogger. 925-447-0213

Chocolate Lab needs home. Moving, can not take with. A terrific family pet. Top Notch Dog Training graduate. AKC reg., neutered, 4 yrs old. 209-543-8054

75 gallon aquarium on a stand, has a magnum 350 pump and is in excellent shape 209-234-2314

RECREATION EQUIPMENT

Golf clubs set and bag $45, Legos set for kids, many pieces & board $45 925-736-7799

$800 worth of almost new rockclimbing gear for only $350. May trade for parachute. 209-462-8077

BMX Mongoose trick bike, 20-inch, great condition, $75 OBO 209-823-0250

Old Gyro-Compass from an old Ship. $150.00 or trade. 925-447-6099

HOME GYM - Prism 5600 by Formula, 13 workout activities, 3ft x 7ft x 7.5ft, in excelent condition. $249 or best offer. 510-538-8732

Motorcycle Helmet, red, good condition. 510-581-1863

Cardio glide $20, Ab roller $10, excell cond. 925-447-4611

24ft Ford Brougham Motorhome, 7.5 liter engine, self-contained, sleeps six, Generator, A/C, Recently rebuilt engine & xmission. $10900, OBO 800-215-9031

RIDESHARING

Express your commute, call 2-RIDE for more information or visit the web site at http://www-r.llnl.gov/tsmp/ for more information

Milpitas - Ride/drive or share from Milpitas or along 680/84 route to Lab. reg. hours. 408-263-8822, ext. 2-8546

Lathrop - Need a rider/driver for an informal carpool. Drive 3-4 days on alternating weeks. 7:45-4:30. 209-858-1521, ext. 4-3279

PATTERSON - Vanpool has 3 seats available in April. Work hours 7:30-4:00. Call Kim 209-892-2118, ext. 2-9502

Stockton - Relax Read Sleep Laugh your way to/from work. 2000 8-passenger luxury van. Reclining seats, reading lights, laptop connections. 209-462-3269, ext. 2-1855

Modesto - 14 passenger luxury vanpool. Captain chairs and individual reading lights. 8 am - 4:30 pm $113/month. 209-521-9047, ext. 2-5177

San Jose & Fremont-Mission - Space is available from San Jose and Fremont-Mission areas. Work hours: 7:30-4:30. Call 408-238-1909, ext. 3-3057

SERVICES

Learn to plant a HEALING garden with knowledge of Herbs; the Circulatory, Nervous, and Digestive system Class April 8th 209-962-5468

Quality House Painting - Exterior only, 15 yrs experience. 925-447-5132

Learn how to turn your boxes of photos and memorabilia into keepsake, photo-safe albums. Call now to schedule a home show! 209-462-8077

Collettes Daycare, Fun, loving environment.15 years exp. Tracy area. I have 2 openings. Lic. number 393602105 209-836-4203

Headshot Photography & B&W Portraiture for Actors, Entertainers, Musicians - Tri-Valley studio and location - 925-449-0107

SHARED HOUSING

Livermore - Unfurnished room in 2BDR apartment. $630/month plus half utils. No Pets/Smoking. Available immediately. 1/2 mile from Lab. 925-784-8908

Master bedroom and bath for rent in 1700 SQ. Ft. Home. No pets/smoking. Some room for furniture. Asking $700+utilities 925-371-2958

TRUCKS & TRAILERS

1989 - Tote Dolly To haul small &large cars $350 or offer. 12 ft. alum Boat & trailor $700 or offer. 925-449-8297

1998 - Dodge Dakota extended cab. 4 cyl, 5 speed, 28,400 mi. Very nice: Alloys, fog lights,bed liner, 4/6 drop. $13,500. 925-443-1390

1982 - Coachmen 20ft. fully self-contained trailer.$1500.00 209-952-5305

Heavy duty motorcycle/utility trailer with extra tire, three rails, 14 inch tires, very sturdy, $450. 925-454-9291

Trailer, car hauler, 6 ft. X 12 ft 4 in long, with ramps.Tandem axle, new tires, heavy duty. $1500. FIRM 925-443-3720

1985 - Nissan King Cab 4X4 5 sp.,air, $2500 OBO 925-443-4350

1996 - Ford F150 Super Cab 8ft bed,bed Liner,camper shell,custon rack,CD player am,fm,Air,2fuel tanks,Cruise,Ps. 5 speed Runs Great Dave 12,500. OBO 925-443-3651

1986 - Wilderness CL3000 5th Wheel, 21.5 ft, Sleeps 6, Very Good Condition, $2000.00. 209-239-1770

1989 - Ford F350 Crew Cab Lariat, Brn, Dually, PS, PB, AC, Cruise, Manual, 5th wheel, bedliner, running boards. 157,000+ miles. $7,900.00 OBO. Donna 925-449-0120

1997 - Suzuki Sidekick JLX, 4-door, auto, 4x4, 20-K miles, great shape, orginal owner, loaded,warranty 6/01. asking $10,875 925-447-5633

VACATION RENTALS

MAUI, WAILEA EKAHI, 1 Bdrm, 2 Bath condo, avail.: 5/ 9 - 7/ 3. Also ARNOLD CABIN avail.: 4/6-9 & May / summer weeks. 510-582-9262

SOUTH LAKE TAHOE - 3 Bedroom 2 Bath Chalet, nicely furnished, all amenities, close to all skiing, few weekends left,most weekdays available,Hurry to Ski!! Reserve Now!! 209-599-4644

Maui, HI - Kahana Reef oceanfront 1BR/1BA condominium. Beautiful two-island view, oceanside pool, and BBQs. Low LLNL rates for year-round reservations. 925-449-0761

Twain Harte - Fully furnished.2bdr 2full bath.TV,VCR,washer,dryer,microwave,dish washer,and more.Close to Dodge Ridge ski area.$150wknd $300wk. 925-443-2808

HAENA, KAUAI - - Private house and/or studio on the scenic north coast near Hanalei Bay - great beaches, hiking, boating and golf. House-$125/day, studio-$75/day. 831-479-3441

WANTED

Wanted: Used metal fence panels for horse fencing. Galvanized preferred. Good condition, good price. 925-447-7912

Lab Dance Band (Swing Band) needs musicians, trombone, trumpet, and sax players. Wed. night rehearsals, South Cafeteria 925-443-2245

After-school childcare in my south Tracy home for 6 and 9 year olds. 2 to 5:30 p.m.. Must have references. 209-830-8321.

Need immed. daycare 1 full, 1 part time in Livermore. Short term until summer OK. 449-4596 or 925-373-4414

Cross Country Ski Boots, 3 pin, size 12(46) 925-443-5565

WANTED- utility trailer, at least 5X10 with 30 inch sides. Willing to pay up to $1000 209-786-3910

Vacuum tube tester and oscilloscope 925-634-0695

Need after school care for my two children, ages 6 and 11 (Monday through Friday). 925-449-4093

Due to space limitations, *Newsline* may withhold ads that have already run. They will still appear on the Web.

SCIENCE DAY

Continued from page 1

Bruce Tarter; James Decker of the DOE Office of Science; and Judson King, provost and senior vice president in the UC Office of the President.

Science Day's theme will be "Scientific Supercomputing: Meeting Next Decade National Challenges via Integration of Theory, Experiments, Technology, and Large-Scale Simulation."

"Computations, particularly supercomputing, cuts across all facets of Laboratory research," said Rokaya Al-Ayat, the Laboratory Science and Technology Office Director, about choosing the day's theme. Al-Ayat's office also put together the agenda for Science Day. "This day is an opportunity to celebrate the Laboratory's great science and technology."

Larry Smarr, director of the California Institute for Telecommunications and Information Technology, will provide the keynote address, "From the Supercomputer to the Grid." Smarr is a pioneer in prototyping a national information infrastructure to support academic research, governmental functions and industrial competitiveness.

Dave Cooper, AD for Computation and the Lab's chief information officer, will present "Simulation: Changing the Nature of Scientific Discovery," an update on the state of simulation and supercomputing at the Lab.

Other presentations include "Computation Materials at the Terascale: Toward Predicting Materials Performance and Aging," "Terascale Turbulence: Simulation of Scale Interactions in Richtmyer-Meshkov Mixing," "Scaling Astrophysics Into the Laboratory," "Quantum Simulations of Condensed Matter Systems," "Computational Biology," "Pushing the Envelope of Global Climate Simulation," and "Application of Large-Scale Computer Simulations for Understanding Earthquake Phenomena."

In addition to the formal presentations, a poster session highlighting an even wider spectrum of Laboratory research will be available. Posters will be set up in a tent area across from Bldg. 123 and will include video displays and demonstrations of hardware and instrumentation (see accompanying story, pages 4-5). The poster session will be open throughout the day.

"This is the chance to learn more about a wide range of science and technology, exchange information and contribute to the cross-fertilization of ideas that makes Livermore the premier national laboratory that it is," Wadsworth said.

The day will conclude with closing remarks by Bruce Tarter.

A complete agenda of Science Day can be found on pages 4-5. For more information on Science Day, including abstracts of the various presentations and posters, see the Website at http://stars.llnl.gov/ScienceDay.

GORDON

Continued from page 1

liferation and in resolving infrastructure problems throughout the complex.

"We now begin a journey to restructure our business and develop a new organizational structure," he said.

NNSA will create two new NNSA associate administrators for operational functions to realign and better support programs. The associate administrator for management and administration will manage budget, finance, procurement, information and people; the associate administrator for facilities and operations will be responsible for the stewardship of NNSA facilities.

These changes aim to consolidate oversight and assessment of security, safety and environmental issues at NNSA sites; establish clear lines of communication for lab directors and plant managers; clarify the roles and responsibilities of NNSA headquarters and field offices; define clear lines of authority; establish greater personal accountability; and improve productivity.

Gordon said the institutions that make up NNSA can no longer work as independent entities. "This organization is going to require us to work together," he said. "We will either succeed as a group or fail as a group."

Under the plan, the deputy administrators who head the NNSA programs will "make decisions corporately as a team.

"I know there are skeptics about this," Gordon said. "But, if we don't do this, someone else will do it for us. The alternatives are not attractive."

Gordon said the reorganization would involve no layoffs though "people may be working in a different environment or a different job."

He also said NNSA is sensitive to issues of collaborations with the larger scientific community. "We need to reach out and bring science to the labs," Gordon said. "We need to offer a breadth of science to attract people. We want to create an organization that's sensitive to that. We want an organization that doesn't create barriers, but removes them."

The administration is in the process of finding senior leaders to fill new NNSA posts and these individuals will work with deputy administrators to develop a plan to implement the organization outlined by Gordon. The plan is to be submitted to Congress by May 1 and Gordon expects to complete the reorganization by Oct. 1.

Emphasizing that he doesn't have all the answers, Gordon said the specialized knowledge of each employee will be needed for the new organization to work. "I can't make this work without you," he said. "The train is moving. This is the direction we're going. Straight up I need your help to make it work."

Technical Meeting Calendar

Friday 16

INSTITUTE OF GEOPHYSICS & PLANETARY PHYSICS
"Warps, Polar Orbits, and Resonant Capture in Galaxies and Planetary Systems," by Scott D. Tremaine, Princeton University Observatory. Noon, Bldg. 319, room 205 (open area). Contact Joanna Allen, 3-0621, or see http://www.llnl.gov/urp/IGPP/SemCalendar/IGPPSemCal.html

Monday 19

H DIVISION
"Inelastic Scattering Matrix Elements, Cross Sections and Reaction Rates for Non-adiabatic B+H2 Molecular Reaction Dynamics," by Sang H. Yang, Air Force Institute of Technology, Wright-Patterson Air Force Base. 10:30 a.m., Bldg. 319, room 205 (open area). Contacts: John Moriarty 2-9964, or Donna Vercelli 2-0976

Tuesday 20

INSTITUTE FOR SCIENTIFIC COMPUTING RESEARCH
"Boundary Conditions and Estimates for the Stokes Equations on Staggered Grids," by Bertil Gustafsson, Stanford University. 10 a.m., Bldg. 451, room 1025 (uncleared area). Contacts: David Brown, 4-3557, or Leslie Bills, 3-8927.

Friday 23

INSTITUTE FOR GEOPHYSICS & PLANETARY PHYSICS
A presentation by Eric Steinbring, UC Santa Cruz. Noon, Bldg. 319, room 205 (uncleared area). Contact: Joanna Allen, 3-0621.

LIVERMORE COMPUTING

Monday 26

"InfiniBand: The Next Paradigm Shift in Storage Subsystems," by Thomas Ruwart, CTO of Ciprico. 9 a.m., Bldg. 451, room 1025 (uncleared area). Contacts: Terry Jones, 3-9834 or Donna Call, 4-9801.

LASER SCIENCE & TECHNOLOGY
"Reflections on Adventures in Coherent Wonderland: Curiouser and Curiouser Counterintuitive Physics. (A Historical Tutorial)," a farewell address by Bruce W. Shore, Laser Science and Technology, retiring after 30 years with LLNL.11 a.m., Bldg. 481 auditorium (cleared area). If you are a red-badge employee and do not currently have Bldg. 481 access, you will need to be vouched in by a person who does. No one time access requests will be processed. Contact: Hao-Lin Chen, 2-6198.

Deadline for the next calendar is noon, Wednesday, March 21.

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DIRECTOR'S OFFICE

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Science Day 2001 serves to remind us of the importance of first-class science and engineering at Livermore. Our many outstanding scientific and technical accomplishments, though greatly valued, do not always receive the high level of recognition within the Lab that they merit. This has been particularly the case during the last several very stressful years, when attention has been heavily focused on other issues such as the need to sustain Laboratory programs and to achieve higher standards of performance in safety and security.

Science Day 2001 will consist of a formal program that features scientific supercomputing and a poster session that covers an even wider spectrum of science and technology projects. The day will provide us with an opportunity to converse with colleagues across the Lab about accomplishments and future projects. It also provides a chance for us to learn more about the wide range of science and technology at the Laboratory, exchange information, and contribute to the cross-fertilization of ideas that makes Livermore the premier national laboratory that it is.

We will be joined for Science Day 2001 by Gen. John Gordon, administrator of the National Nuclear Security Administration; Judson King, provost and senior vice president for Academic Affairs in the UC Office of the President; James Decker, acting director of the DOE Office of Science; and other DOE dignitaries and invited guests. Gordon, King and Decker will speak as part of the formal program, which will take place in the Bldg. 123 auditorium and will also be broadcast on Lab TV. The schedule of events and details of the program are available at http://stars.llnl.gov/ScienceDay/

"Scientific Supercomputing" is the organizing theme of the formal presentations. We are highlighting the important and ever-growing role of large-scale simulation at the Laboratory, but also how simulation is used in an integral way with theory, experiments and technology development to meet national challenges. Scientific supercomputing now reflects this influence and permeates all our major research programs. Our plenary speaker, Larry Smarr, was the founding director of the National Computational Science Association (NCSA) and is the current director of the California Institute for Telecommunications and Information Technology. Smarr has been a pioneer in prototyping a national information infrastructure to support academic research, governmental functions and industrial competitiveness. He will begin the day's slate of scientific presentations with a talk entitled "From the Supercompter to the Grid." The agenda for the balance of the presentations is organized to our strategic mission areas — national security, strategic science and technology, energy and environmental science, and biosciences and biotechnology.

Large-scale simulations will help us answer many difficult scientific questions: How do materials age and what effect does aging have on material properties? What are the details of material mixing in strongly turbulent flows such as those that occur in nuclear weapons and combustion engines? How do human activities impact the world's climate and our regional climate? What processes are responsible for damage to DNA and DNA repair? In detail, can we predict the ground motion caused by an earthquake and the resultant response of complex structures? The presentations will feature the use of simulations — together with theory and experiments — to address these and other questions that are important to the Lab's missions and relate to major national challenges.

Unfortunately, with a daylong program, only a fraction of our significant accomplishments can be presented, but many other projects will be featured in a poster session. The session will include not only posters, but also video displays and demonstrations of hardware and instrumentation from programs and directorates across the Laboratory. It will be an opportunity to interact one-on-one with your colleagues and our visitors and to find out about exciting science and technology in all of the Laboratory's mission areas.

I urge you take the opportunity to join us in this celebration of science at Livermore. Scientific and technical excellence applied to national challenges is the vital force that makes the Laboratory thrive. Science Day 2001 pays tribute to this strength.

Jeff Wadsworth is the deputy director of Science and Technology.

MORTALITY

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These rates are further decreased from rates recorded in an earlier study that looked at employee mortality for the period 1969 through 1980. In that study, Lab employees died at less than three-quarters the rate of the U.S. population.

In the latest study, the sharpest declines in mortality rates were for cardiovascular disease and respiratory disease. Those for cancer were less dramatically reduced.

The observed patterns of death are consistent with the healthy worker effect, in which the very ability to acquire and maintain a job puts the study population at a health advantage to the population at large. However, the current magnitude of the effect is twofold greater than what is generally seen, according to Mendelsohn.

One potential driver for these results may be the low smoking rates for the Laboratory population. In the same period covered by the recent study, California smoking rates were roughly 70 percent of the rest of the country, and the corresponding cardiovascular disease rates for California was 87 percent of the United States. Since smoking was discontinued in all Lab buildings during the period of the second study, it is possible that smoking rates at the Laboratory — and the resulting cardiovascular disease — have dropped even more that those of the state.

Other factors that may be operating are lifestyle issues such as diet, exercise and enjoyment of work. The data show no indication of any occupational illness at the Lab, said Mendelsohn.

"Whatever the reasons for this remarkable longevity of the Lab population, we can rejoice in the results," Mendelsohn said.

Mendelsohn and Moore used Lab personnel data, mortality data from the National Death Index and calculations of mortality based on U.S. death rates to determine Standardized Mortality Ratios for Lab employees relative to the U.S. population. These calculations are continuing as the researchers analyze the decrease in melanoma death rate and further evaluate the effects of retirement on mortality rate.

INFRASTRUCTURE

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attention has been appropriately focused on the scientific challenges of the Stockpile Stewardship Program at the expense of the infrastructure. "Now is the time to invest in the infrastructure of the NNSA facilities," he said, citing examples of the poor condition of the working environments at several locations throughout the complex.

NNSA has assessed that funding requirements for facilities are about $1.3 billion per year, while the current funding averages about $650 million per year. Gordon, Tarter and Browne agreed that the NNSA cannot support the schedule and plan for refurbishment with the current infrastructure.

"The Stockpile Stewardship Program will not succeed without the new-facility investments being made at the NNSA laboratories," Tarter wrote. "A major increase in investments is needed to deal with aging NNSA facilities throughout the nuclear weapons complex — affecting workplace quality and, in some cases, severely limiting productivity."

As an example, Tarter cited the delivery of the Accelerated Strategic Computing Initiative's Blue Pacific, which, at the time, was the world's most powerful supercomputer. "We had to repair the leaky roof of the building in which the machine was to be housed," Tarter said.

Over the years, the Laboratory has depended on having special facilities and equipment in an accommodating work environment to attract and retain an exceptional staff. Sustaining the quality of the workforce is a particularly challenging task in view of the high demand in the private sector for skilled people. The task is made more difficult by the continued aging of Lab facilities without major reinvestment, Tarter said.

To counter, the Lab has undergone various cost-cutting initiatives, enabling the Lab to reinvest those saving in the infrastructure. The appointment of an institutional facilities manager ensures effective investment of limited funds.

"Through the use of the prioritization methods and innovative rehabilitation and D&D processes we have piloted, the Laboratory has in place effective means for managing its infrastructure," Tarter said. "But we do not have enough funding to make headway in reducing accumulated problems.

"The situation at the Laboratory and other NNSA sites cannot be rectified without substantial new funding to revitalize the NNSA nuclear weapons complex," he added.

The NNSA weapons complex will not be able to make headway on its deficiencies in facilities and infrastructure without adequate multi-year funding for the Infrastructure Recapitalization Initiative.

Both Tarter and Browne emphasized an infusion of new dollars is vitally important, and processes have been developed at the Laboratory, LANL — and complex-wide through NNSA/DP's Infrastructure and Facilities Management Plan — to ensure that the funds are applied to meet the highest priority, integrated needs of NNSA .

"Through the development of a Facility and Infrastructure Management Plan, NNSA/DP has put into place a planning process to integrate and prioritize complex-wide needs," Tarter summed up. "We support that planning process, and the Laboratory will help NNSA/DP to continually improve the process and to better understand the long-term needs of the complex, which will evolve as we better understand the needs of the stockpile."

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